

ABSTRACT

In a multiply-complexed one-dimensional structure having a hierarchical structure in which a linear structure as an element of a one-dimensional structure having a finite curvature is made of a thinner one-dimensional structure having a finite curvature, at least two layers of one-dimensional unit structures are bonded in at least one site. For example, in a multiply-twisted helix having a hierarchical structure in which a linear structure as an element of a spiral structure is made of a thinner spiral structure, at least two layers of the unit spiral structures are bonded in at least one site. Alternatively, in a multiply-looped ring structure having a hierarchical structure in which a linear structure as an element of a ring structure is made of a thinner ring structure, at least two layers of ring unit structures are bonded in at least one site.

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